

SEQUENCE LISTING

Appl. No. 08/448,727

```
<110>
       Amgen Inc.
       Burnette, Walter N.
<120> MODIFIED PERTUSSIS TOXIN
       54113.8009.US00
<130>
<140>
       08/448,727
1995-05-24
<141>
      us 08/034,460
<150>
      1993-03-18
<151>
<150> US 07/232,482
<151>
      1988-08-17
       US 07/094,307
1987-09-04
<150>
<151>
<160> 27
<170> PatentIn version 3.3
<210>
       12
<211>
<212>
      DNA
<213>
      Artificial
<220>
<223> Synthesized oligodeoxynucleotide
<400> 1
                                                                          12
catcgattct ag
<210>
       20
<211>
<212>
      DNA
      Artificial
<213>
<220>
       Synthesized oligodeoxynucleotide
<223>
<400> 2
                                                                          20
tgcagtagct aagatcttaa
<210>
       3
       10
<211>
<212>
       DNA
<213> Artificial
<220>
       Synthesized oligodeoxynucleotide
<223>
<400> 3
                                                                           10
cgatttgatt
```

<210> 4 <211> 12

| | | Appl. | No. | 08/448,727 |
|----------------------------------|---|-------|-----|------------|
| <212> <213> | DNA Artificial | | | |
| <220> <223> | Synthesized oligodeoxynucleotide | | , | |
| <400> taaacta | 4 aaga tc | | | 12 |
| <210> <211> <212> <213> | 5 46 DNA Artificial | | | |
| <220> <223> | Synthesized oligodeoxynucleotide | | | |
| <400> ctagaa | 5 ggaa ggaataacat atggttaacg cgttggaatt cggtac | | | 46 |
| <210> <211> <212> <213> | 6 38 DNA Artificial | | | e e |
| <220> <223> | Synthesized oligodeoxynucleotide | | | |
| <400> ttcctt | 6 cctt attgtatacc aattgcgcaa ccttaagc | | | 38 |
| <210> <211> <212> <213> | 7 12 DNA Artificial | | | |
| <220> <223> | Synthesized oligodeoxynucleotide | | | |
| | 7 ttct ac | | | 12 |
| <210> <211> <212> <213> | 8 14 DNA Artificial | | | |
| <220> <223> | Synthesized oligodeoxynucleotide | | | |
| <400> acgcaa | 8 gatg agcc | | | 14 |
| <210><211><211><212><213> | 9 24 DNA Artificial | | | |

| | | Appl. | No. | 08/448,727 |
|----------------------------------|----------------------------------|-------|-----|------------|
| <220> <223> | Synthesized oligodeoxynucleotide | | | |
| <400> tatgga | 9 cgat ccacctgcta ccgt | | | 24 |
| <212> | 10 24 DNA Artificial | | | |
| <220> <223> | Synthesized oligodeoxynucleotide | | | |
| <400> acctgct | 10 tagg tggacgatgg cata | | | 24 |
| <212> | 11 22 DNA Artificial | | | |
| <220> <223> | Synthesized oligodeoxynucleotide | | | |
| <400> attccg | 11 ctat gactcccgcc cg | | | 22 |
| <210> <211> <212> <213> | 12 24 DNA Artificial | | | |
| <220> <223> | Synthesized oligodeoxynucleotide | | | |
| <400> aggcga | 12 tact gagggcgggc ggcc | | | 24 |
| <210> <211> <212> <213> | 13 22 DNA Artificial | | | |
| <220> <223> | Synthesized oligodeoxynucleotide | | | |
| <400> atacaa | 13 gtat gactcccgcc cg | | | 22 |
| <210> <211> <212> <213> | 14 24 DNA Artificial | | | |
| <220> <223> | Synthesized oligodeoxynucleotide | | | |

| | | Appl. | No. | 08/448,727 |
|----------------------------------|----------------------------------|-------|-----|------------|
| <400> tgttca | 14 tact gagggcgggc ggcc | | | 24 |
| <211> <212> | 15 22 DNA Artificial | | | |
| <220> <223> | Synthesized oligodeoxynucleotide | | | |
| <400> ataccg | 15 ctat gaatcccgcc cg | | | 22 |
| | 16 24 DNA Artificial | | | |
| <220> <223> | Synthesized oligodeoxynucleotide | | | |
| <400> tggcga | 16 tact tagggcgggc ggcc | | | 24 |
| <211> <212> | 17 22 DNA Artificial | | | |
| <220> <223> | Synthesized oligodeoxynucleotide | | | |
| <400> ataccg | 17 ctat gacggccgcc cg | | | 22 |
| <210> <211> <212> <213> | 18 24 DNA Artificial | | | |
| <220> <223> | Synthesized oligodeoxynucleotide | | | |
| <400> tggcga | 18 tact gccggcgggc ggcc | | | 24 |
| <210> <211> <212> <213> | 19 22 DNA Artificial | | | |
| <220> <223> | Synthesized oligodeoxynucleotide | | | |
| <400> ataccg | 19 ctat gactccaagc cg | | | 22 |

| <210> <211> <212> <213> | 20 24 DNA Artificial | |
|----------------------------------|----------------------------------|----|
| <220> <223> | Synthesized oligodeoxynucleotide | |
| <400> tggcga | 20 tact gaggttcggc ggcc | 24 |
| <210> <211> <212> <213> | 21 22 DNA Artificial | |
| <220> <223> | Synthesized oligodeoxynucleotide | |
| <400> attggaa | 21 atat gactcccgcc cg | 22 |
| <210> <211> <212> <213> | 22 24 DNA Artificial | |
| <220> <223> | Synthesized oligodeoxynucleotide | |
| <400> acctta | 22 tact gagggcgggc ggcc | 24 |
| <210> <211> <212> <213> | 23 22 DNA Artificial | |
| <220> <223> | Synthesized oligodeoxynucleotide | |
| <400> atacaa | 23 ctat gacggccgcc cg | 22 |
| <210> <211> <212> <213> | 24 24 DNA Artificial | |
| <220> <223> | Synthesized oligodeoxynucleotide | |
| <400> tgttga | 24 tact gccggcgggc ggcc | 24 |
| <210> | 25 22 | |

<212> DNA

<213> Artificial

<220>

<223> Synthesized oligodeoxynucleotide

<400> 25

ataccgctat ccgtcccgcg ac

22

<210> 26

<211> 24

<212> DNA

<213> Artificial

<220>

<223> Synthesized oligodeoxynucleotide

<400> 26

tggcgatagg cagggcgctg ggcc

24

<210> 27

<211> 235 <212> PRT

<213> Bordetella pertussis

<400> 27

Asp Asp Pro Pro Ala Thr Val Tyr Arg Tyr Asp Ser Arg Pro Pro Glu
1 5 10 15

Asp Val Phe Gln Asn Gly Phe Thr Ala Trp Gly Asn Asn Asp Asn Val 20 25 30

Leu Asp His Leu Thr Gly Arg Ser Cys Gln Val Gly Ser Ser Asn Ser

Ala Phe Val Ser Thr Ser Ser Ser Arg Arg Tyr Thr Glu Val Tyr Leu 50 60

Glu His Arg Met Gln Glu Ala Val Glu Ala Glu Arg Ala Gly Arg Gly 65 70 75 80

Thr Gly His Phe Ile Gly Tyr Ile Tyr Glu Val Arg Ala Asp Asn Asn 85 90 95

Phe Tyr Gly Ala Ala Ser Ser Tyr Phe Glu Tyr Val Asp Thr Tyr Gly 100 105 110

Asp Asn Ala Gly Arg Ile Leu Ala Gly Ala Leu Ala Thr Tyr Gln Ser 115 120 125

Glu Tyr Leu Ala His Arg Arg Ile Pro Pro Glu Asn Ile Arg Arg Val 130 135 140 Thr Arg Val Tyr His Asn Gly Ile Thr Gly Glu Thr Thr Thr Glú 145 150 155 160

Tyr Ser Asn Ala Arg Tyr Val Ser Gln Gln Thr Arg Ala Asn Pro Asn 165 170 175

Pro Tyr Thr Ser Arg Arg Ser Val Ala Ser Ile Val Gly Thr Leu Val 180 185 190

Arg Met Ala Pro Val Ile Gly Ala Cys Met Ala Arg Gln Ala Glu Ser 195 200 205

Ser Glu Ala Met Ala Ala Trp Ser Glu Arg Ala Gly Glu Ala Met Val 210 215 220

Leu Val Tyr Tyr Glu Ser Ile Ala Tyr Ser Phe 225 230 235